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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,017	08/09/2001	Itsuhei Ogata	P 282802 ND, NJ-J198-US	2478

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EXAMINER

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 10/23/2002

8

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/925,017

Applicant(s)

OGATA ET AL.

Examiner

Kallambella Vijayakumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☒ Claim(s) 2, 6 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other: \_\_\_\_

### ***DETAILED ACTION***

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1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan with application numbers 2000-242119 on 08/10/2000 and 2001-204217 on 07/05/2001. Receipt is acknowledged of certified copies of the applications submitted under 35 U.S.C. 119(a)-(d) which papers have been placed of record in the file. Claims 1-13 are currently pending.
2. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A (1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the examiner on form PTO-892 has cited the references, they have not been considered.

### ***Claim Objections***

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Claims 2-3 are objected to because of the following informalities: The underlining of the letters or words is not allowed as in Claim-2. Claim-3 refers to any one of Claim-1, while only one Claim-1 does exist. Appropriate corrections are required.

***Claim Rejections - 35 USC § 112***

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-7 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "reduction resistant" in claims 1-7 and 13 is a relative term, which renders the claim indefinite. The term "reduction resistant" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

For the examination purposes, the examiner construes that the term "reduction resistant" in the instant claims to require materials/thermistors which are stable structurally and functionally upon short exposure to reducing atmospheres.

Regarding claims 1 and 3 the phrases "including" and "one type of an element:" renders the claims indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. It will not enable the public to make use of the invention without undue burden, without violating the boundaries of the instant claims as it is unclear from either the specification or from the claims, in which materials are covered by these phrases and which ones are excluded. See MPEP § 2173.05(d).

Regarding claim 2 the phrase "when" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention It is unclear what

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should be the condition "when" a limitation is met. See MPEP § 2173.05(d). Suggestion is to delete the word "when" in line-2 of the Claim-2.

Regarding claim 6, the phrases "expressed by", renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. It is not clear in which materials are included and which ones are excluded by the phrase "expressed by" so that the public can make use of the disclosure by not stepping into the boundary limits of the instant claims without undue burden and experimentation. See MPEP § 2173.05(d).

***Claim Rejections - 35 USC § 102***  
***And/or***  
***Claim Rejections - 35 USC § 103***

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-5, 7-13 are rejected under 35 U.S.C. 102(b/e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Goto et al (US Patent #5,815,063).

Goto et al disclose PTC thermistors formed of MM'O<sub>3</sub> type titanates of Ba, Ca and Pb as principal ingredient that had improved durability in the reducing atmospheres (Abstract). The sintered body of the thermistors comprised of very fine particles of either the *solid titanates of Ba, Ca, and Pb, or formed from suitable precursors*, as main ingredients and, at least one compound selected from oxides of Y, Sm, Dy, Ce, and Ga, further including SiO<sub>2</sub> and Mn-Oxide, these materials used as *solid or formed from precursors*, as ancillary components. (Col-4, Line: 14 to Col-5, Line-25). Goto indicate that further variations in the exemplary embodiments are possible and there are no restrictions imposed on the raw material powders to be used to attain the desired result, and the component ratios, resistance values and melting points would be inherent. Silica meets the limitation of the sintering aid (Col-7, Lines: 18-31).

Goto et al further disclose the fabrication of the thermistor element including the following steps:

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a). mixing raw material powder corresponding to the principal ingredient/s and the subordinate ingredient/s with a ball mill or dispersion mill; b). calcining the mixed powder; c). grinding the calcined powder using a ball mill; d). molding said ground powder into shapes, and e). firing said molded shapes,

The mean particle diameter of the main ingredient raw material powder is preferably less than about 1.3  $\mu\text{m}$  during said step (a) and the mean particle diameter of the ground powder subsequent to said step (c) ranges from 0.6 to 2.0  $\mu\text{m}$  (Col-1, Lines: 45-59; Col-3, Lines: 15-44; Fig-1 and 3; Col-8, Example-1; Col-8, Table-4). The use of sintering aids in the high temperature manufacture of ceramics with very fine particle size is inherent. The size of the particles of reactant components and the product would be inherent. The use of thermistor as a sensor or probe is inherent. All the limitations of the instant claims by the applicants are met.

The reference is anticipatory.

In the alternative that the disclosure by Goto et al is insufficient to arrive at the instant claims, it would be in the purview of a skilled artisan to make minor modifications to the compositions and manufacturing steps based on the selection of raw materials including solid/liquid/solution precursors for the fabrication of the resistor to obviously arrive at the instant claims of the applicants.

Claims 1-5, 7-9, 13 are rejected under 35 U.S.C. 102(e/a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yamada et al (US Patent #6,143,207).

Yamada et al disclose the wide range thermistor materials comprising an electrically-insulating ceramic matrix and second phase grains as discontinuously dispersed in the matrix, in which the second phase grains are of a semiconductive or conductive substance and optionally contain a resistance-controlling additive such as silicides, sulfides, oxides, etc., a third phase

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grains with internal stress-relaxing ability having a lower modulus of elasticity than the matrix and the second phase grains, and a resistance stabilizer of  $\text{TiO}_2$  and/or  $\text{Ti}_n\text{O}_{2n-1}$  ( $n=4$  to  $9$ ). (Abstract). The thermistor matrix comprises one or more insulating ceramics selected from single oxides, composite oxides, nitrides and their solid solutions, including preferred oxides of Si, Al, Zr, Cr, Ti, Mo, Hf, Y, Nb, W, Mg, Ti, Eu, Dy, Rh and  $\text{MgAl}_2\text{O}_4$ . The second phase materials included one or more semiconductive or conductive carbides, and oxides with various structures including spinels and perovskites of Group Ia to Group VIIa, and the selected preferred oxides being  $\text{BaTiO}_3$ ,  $\text{SrTiO}_3$ ,  $\text{PbCrO}_3$ ,  $\text{CaMnO}_3$ ,  $\text{CaCrO}_3$ ,  $\text{NiFeO}_3$ , and  $\text{SrCrO}_3$ . The preferred additives are any of borides, carbides, sulfides, silicides, nitrides and/or oxides of Zr, Ti, Hf, V, Nb, Ta, Cr, Mo and W. The size of each matrix aggregate is preferred to be 1-500 microns (Col-8, Line-61 – Col-10, Line-32; Col-11, Lines: 62-65). Yamada et al indicate that it is possible to control the resistance of thermistor by varying the composition (Col-7, Lines: 15-20), while these are resistant to reduction and useful in reducing atmospheres (Col-6, Line: 5; Col-22, Lines: 31-41). The thermistor materials are used in various temperature sensors, fuel level gauges, switching powers, humidity sensors and anemometers (Col-1, Lines: 11-15).

The method for producing the wide-range thermistor material comprises: a step of mixing a semiconductive or conductive, second phase material powder and an insulating ceramic matrix powder optionally along with a sintering aid to prepare a composite powder, a step of shaping and sintering the composite powder, in which the sintering pattern may additionally comprise heat treatment for growing the matrix crystal grains (Col-5, Lines: 26-56). The instant claim limitations of particle size, resistance, melting points and the ratio of components are inherent. All the limitations of the instant claims are met.



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The reference is anticipatory.

In the alternative that the disclosure by Yamada et al is insufficient to arrive at the instant claims, it would be in the purview of a skilled artisan to make minor modifications to the compositions and preparative conditions to obviously arrive at the instant claim limitations of the applicants..

Claims 1-13 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ogata et al (DE 19908444).

Ogata et al discloses a wide range thermistor element composed of a mixed sintered body of the formula  $a(\text{YCr}_{0.5}\text{Mn}_{0.5}\text{O}_3).b(\text{Al}_2\text{O}_3)$  and  $a(\text{YCr}_{0.5}\text{Mn}_{0.5}\text{O}_3).b(\text{Al}_2\text{O}_3+\text{Y}_2\text{O}_3)$  following the relationship  $0.05 \leq a < 1.0$ ,  $0 < b \leq 0.95$ , and  $a+b=1$ , and thereby meeting the instant claims limitations on the composition and the ratio of the perovskite oxide to the oxide/mixed oxide in the composite oxide body of the thermistor. Further, Ogata et al disclose various methods to make the thermistor by permutation and combinations of processing the materials including precursor solutions meeting the limitations of the instant claims. Ogata's disclosure on the thermistor compositions and methods of making them are same or similar to the instant claim limitations. The particle size and the resistance requirements would be inherent. Ogata et al also disclose a temperature sensor comprising the thermistor element that is stable in reducing environment (Abstract, Figure-1, 4-25, whole article). All the claim limitations are met.

The reference is anticipatory.

In the alternative that the disclosure by Ogata et al is insufficient to arrive at the instant claims, it would be in the purview of a skilled artisan to make minor modifications to the

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compositions and preparative conditions to obviously arrive at the instant claim limitations of the applicants.

The product by process limitation in Claim-1 has not been given any patentable weight, as when the reference teaches a product that appears to be the same as, or an obvious variant of, the product set forth in a product-by-process claim although produced by a different process. the claim would not be patentable. See *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983) and *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). See also MPEP §2113.

It is the examiners position that there is no clear marked distinction between the terms "reduction resistant" in the instant claims by the applicants and the usefulness of thermistors in the "reducing atmospheres" disclosed in the art. For instance, Goto et al claim improved "durability in reducing atmospheres", while Yamada et al claim "resistant to reduction and being useful in reducing atmospheres", and Ogata et al being silent on this terminology on the use of thermistors. The structural and functional stability of the thermistors upon exposure/use in reducing atmospheres would be the prime requisite property that is implied and would be inherent in both of these scenarios.

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### ***Double Patenting***

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A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

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A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims (1-7) are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims (1-13) of pending U.S. Patent Application No. 09/924,596. Although the conflicting claims are not identical, they are not patentably distinct from each other because the both the instant claims and claims of pending U.S. Patent Application No. 09/929,870 are drawn for the "thermistor", made from the components whose compositions are identical or similar, and mere use of one composition over another does not patentably distinguish the instant claims from each other.

Any terminology in the preamble that limits the structure of the claimed invention must be treated as a claim limitation. See, e.g., *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*,

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868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989). See also *In re Stencel*, 828 F.2d 751, 4 USPQ2d 1071 (Fed. Cir. 1987). Further, if a prior art structure is capable of performing the intended use as recited in the preamble, then it meets the claim. See, e.g., *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) See also MPEP § 2112 - § 2112.02.

Claims (10-12) are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims (17-18) of pending U.S. Patent Application No. 09/924,596. Although the conflicting claims are not identical, they are not patentably distinct from each other because the both the instant claims and claims of pending U.S. Patent Application No. 09/929,870 are drawn for the “method of making a thermistor/article”, made from the process using the same or similar components and techniques and mere recitation of individual steps over a combination or a mere change in the name of the product does not patentably distinguish the instant claims from each other.

Claim (13) is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims (21) of pending U.S. Patent Application No. 09/924,596. Although the conflicting claims are not identical, they are not patentably distinct from each other because the both the instant claims and claims of pending U.S. Patent Application No. 09/929,870 are drawn for the “temperature sensor”, made from the components whose compositions are same or similar, and mere use of one composition over another does not patentably distinguish the instant claims from each other.

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### *Conclusion*

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ogata et al (EP 866472), Ogata et al (FR 9902475), Ogata et al (JP10321048) 866472) and Ogata et al (JP 200001238) disclose wide range thermistors usable in reducing atmospheres and various methods to make them.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 703-305-4931. The examiner can normally be reached on M-Th, 07:00 - 15.30 hrs, Fri: 05.30-14.00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 703-308-4708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3599 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

kmv  
October 21, 2002

  
**Mark Kopec**  
**Primary Examiner**